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ENVIRONMENTAL QUALITY

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DROUGHT IN NSW WORST EVER; CROP FAILURES WIDESPREAD

Effect on Irrigation

Canberra THE AUSTRALIAN in English 5 Feb 81 p 3

[Article by Vernon Graham]

[Text] The unyielding drought in NSW is threatening to overwhelm the whole of the inland, a worrying prospect for the Minister for Agriculture, Mr Hallam, who plans to visit the worst affected areas next week.

About 80 per cent of the State is gripped by a drought now considered the worst in many districts.

Major irrigation dams are drying up at a frightening pace as farmers quickly exhaust their water allocations in an attempt to save crops.

"Things are bloody grim," said a spokesman for the Minister for Water Resources, Mr Gordon.

Keepit Dam in the Namoi Valley of northern NSW, where 22,000 ha of cotton have been planted, is 13 per cent full.

A spokesman for the Department of Agriculture, Mr Frank Cutting, said cotton yields would be hard hit if the "big dry" continued into autumn.

Many growers in the Namoi Valley had only enough water to irrigate their cotton crops once more before the harvest in April and May.

Crop Losses

Sydney THE SYDNEY MORNING HERALD in English 11 Feb 81 p 3

[Article by Peter Diegutis: "NSW Drought Worst On Record"]

[Text] The NSW drought is officially recognised as the worst on record, with 90 per cent of the State drought-declared and the cost estimated at almost \$1 billion.

Many areas of the State are entering a third successive year of drought and 52 of the 58 pastures protection districts have been drought-declared for February.

According to the Minister for Agriculture, Mr Hallam, never before have so many districts been declared drought-stricken for such a long time.

He said yesterday that the recent rain had given some relief in a number of areas. But unless there was good follow-up rain during the next two or three months there was no end of the drought in sight.

Losses were enormous, amounting to more than \$933 million by June 30, 1981. The government was spending \$8 million a month in drought relief and its costs so far on various loans and freight concessions to farmers amounted to \$70 million.

But farmers were bearing the financial brunt of the drought, particularly in crop failures, which had cost an estimated \$797 million.

The bulk of this was in last season's wheat crop, which was reducing farmers' income by \$645 million.

Mr Hallam said there was a general lack of knowledge among farmers about what forms of Government assistance were available to help them survive the drought.

A booklet on relief measures had been printed and 100,000 copies would be distributed so that every farmer in NSW who wanted one should have it soon.

The booklet, entitled NSW Drought Relief 1981, outlined the forms of financial help available to farmers in drought-declared areas.

CS0: 5400

INDUSTRY MINISTER CALLS FOR POLLUTION STANDARDS

Worst Offenders Named

Jakarta KOMPAS in Indonesian 3 Feb 81 pp 1, 5

[Excerpts] Industry Minister Ir A. R. Soehoed believes that industrial pollution is not serious yet and that, within its own sphere, the Department of Industry has always tried to limit amounts of pollutants. But standards for determining permissible levels of pollution must still be established by the PPLH [Development and Environmental Supervision] Minister.

Minister Soehoed's comment was in reaction to a statement by PPLH head, Prof Emil Salim, who said, among other things, that the Agriculture and Industry Departments were the worst polluters.

Soehoed said there were indeed a few instances where industries had polluted the environment to a dangerous level. But these cases do not constitute a nationwide threat.

Pollution is a social matter, and when standards of living are raised, so also are the voices of more and more persons who demand that something be done about cleaning up the environment.

The minister said Indonesian industries have in fact gradually decreased amounts of pollutants, depending on the capacity of individual industries to do so as well as on how much a particular community protests against the contamination. "Undoubtedly industries could be compelled to modernize equipment in order to reduce pollution levels significantly. But production costs would be prohibitive, and the public simply could not foot the bill," said Soehoed.

Up till now the Department of Industry has set its own specific standards, which in all probability could be observed by Indonesian industry as a whole. But there are no objective criteria for determining what environmental pollution itself is, and such criteria are what is needed from the PPLH Ministry.

The minister believes industrial pollution isn't serious yet, but he is not prepared to define "serious." The standards for deciding what is serious and what is not have not been set.

Pesticide Use Still Controlled

Jakarta KOMPAS in Indonesian 5 Feb 81 pp 1, 9

[Excerpts] Pollution resulting from the use of pesticides in farming is still relatively slight. Until now there has been an effort to keep the use of these chemicals down to a minimum to avoid unwanted side effects. Nevertheless, there are no specific standards as a basis for determining levels of pollution.

So stated the deputy minister of Food Production, Ir A. Affandi, among other things, upon being asked about the use of pesticides in efforts to increase food production and about the effect of pesticides on the environment.

According to the deputy minister, while pesticides have in fact caused pollution, the contamination is limited and can be kept under control.

In a discussion toward the close of a workshop on environmental impact analysis, PPLH Minister Prof Emil Salim disclosed that the Department of Industry together with private industrial enterprises and the Department of Agriculture through the use of pesticides are the major polluters of the environment.

Ir Affandi explained that it is difficult to avoid using pesticides since they are one of the means of increasing food production. Nevertheless, as few chemicals as possible are being used, and the public has not been endangered so far.

The deputy minister added that the use of pesticides in Indonesia remains small compared to that of the more developed nations. "Only one-fifth, or 20 percent of what they use," he noted.

He substantiated his point by saying that pesticide use during the past year is estimated to have reached 8 million liters. That amount was used on 9 million hectares of land in food production and 12 million hectares planted with other crops.

Moreover, the deputy minister indicated that Agriculture Department policy at present puts much greater emphasis on a two-pronged fight against pests and plant diseases. In addition, varieties of rice plants that are tolerant of certain pests and plant diseases are being developed in the effort to hold down use of pesticides.

9792

CSO: 5000

CHEMICAL PLANT POLLUTION BRINGS MISERY TO PEASANTS

Beijing RENMIN RIBAO in Chinese 18 Aug 80 p 2

[Article in "Reporter's Letter" column by staff reporter Liu Heng [0491 5899]
"Peasants Hard Hit by Pollution on Upper Yaer Lake"]

[Text] In the office of the sewage treatment ground of the Gedian Chemical Plant on Yaer Lake near Echeng city, Hubei Province, stands a power-driven model of a sewage treatment oxidizing pool. This detailed model, which cost 5,000 yuan to make, has been exhibited in Beijing and Guangzhou. To build the project of which this is a model, the state invested 6.53 million yuan and the people of Echeng city put in, over a period of 3 years, 6 million standard work units of voluntary labor. The project has been commended by some people in other parts of the country. This summer I was covering the story in the Yanjia Lake region along upper Yaer Lake and heard other voices. Peasants on both banks were incessantly beseeching high heaven: "Hurry and save us! Save our children and grandchildren!"

Originally, a pipeline, which is 12 li long and cost 1.2 million yuan to build, carried sewage from the Gedian Chemical Plant, the Wuhan No 2 Chemical Plant, and the Jianxin Chemical Plant directly into the oxidizing pool. However, after the pool was completed in August of last year, the sewage from the three plants flowed through the pipeline for only 1 month. In the long period of time since then, it has flowed through an open ditch, on the side of the pipeline, into the oxidizing pool. Everything the several tens of thousands of peasants living in the four communes along this ditch eat and use has been contaminated by this sewage. When it rains, the sewage floods their fields; when it is dry the sewage irrigates their fields. Great swathes of weeds have died, and great swathes of cereal crop seedling have been damaged. People and cattle have been poisoned continually.

Why does the sewage flow through the open ditch instead of the pipeline? In the beginning, sewage from the three plants had to be treated in one or two stages in order to meet the industrial drainage standards, before it could become a balanced mixture that could be sent through the pipeline into the oxidizing pool, where it was then treated in three stages. However, the three plants either treated the sewage very little or did not treat it well enough to attain the industrial drainage standard. If sewage thus treated had entered the pipeline,

it would have quickly corroded and damaged the pipeline. At the same time, the oxidizing capacity of the pool is limited, and if its capacity had been exceeded it would have either become stagnant or channel sewage into lower Yaer Lake, thereby polluting the Changjiang River.

Since 1976, the three plants have paid attention to the question of pollution control, with some success. However, the phenomenon of "heavy on production, light on control of the 'three wastes'" still exists to a serious degree. Many control items were delayed in getting started and progress was slow. Some of the funds allocated by the higher authorities for pollution control were little used and some were not used for pollution control. Pollution multiplied far faster than the development of production.

After the oxidizing pool was built, the suffering of the peasants in the area on both banks of the Yanjia Lake increased even more. Previously, the area that was polluted was larger and the degree of pollution correspondingly smaller. Now, the pollution is concentrated in this area. Previously, when crops were damaged or cattle poisoned to death, the Gudian Chemical Plant was responsible for paying compensation. Now between the three factories, and between the factories and the sewage treatment ground, there is a shifting of responsibility on each other. The responsibility for the harm done to the peasants has become a rubber ball that they all kick back and forth. Those who have been wronged find it hard to appeal to anybody, and those that have suffered find it hard to speak to anybody. In order to solve the urgent and necessary problem of drinking water, the peasants are willing to dig wells, but their proposal was kicked back and forth and no one was willing to put up the money for the wells.

I hope that these units and other units concerned will give serious consideration to the hardships of the peasants, stop disputing over trifles, and unite with one heart and one mind to control this pollution. Now, first of all, the problem of drinking water for several tens of thousands of peasants must be solved, and the people must be rescued from their misery.

9727

CSO: 5000

NEW NONPOLLUTING PRESERVATIVE FOR REINFORCING BARS SAVES MONEY

Beijing REMNIN RIBAO in Chinese 23 Nov 80 p 1

[Article in the "Meritorious Service for the Four Modernizations" column by Shen Zhenhai [3747 2182 3189]: "New-Type Nonpolluting Preservative for Reinforcing Bars Developed"]

[Text] Engineer Fang Chengshi [2455 2110 0099] and other members of the Beijing Municipal Construction Materials Scientific Research Institute have successfully developed a new-type nonpolluting preservative for reinforcing bars.

The reinforcing bars of the aerocrete products made by the Beijing Municipal Aerocrete Works require a preservative coating. According to the technological specifications recommended for this patented equipment, the necessary preservative for the bars is a latex coating of one part cement and one part casein. This preservative is a compound that needs casein extracted from milk and white sugar. The preservative annually produced for this equipment expends over 2 million jin of milk and over 2,000 jin of white sugar. The staff and workers of the aerocrete works raised this question: "Can't a preservative be compounded without using casein and white sugar?" Engineer Fang Chengshi and Ye Zhihe [5509 2535 0735], Li Zhongsheng [2621 0112 0581], and Zhou Wenqin [0719 2429 3830] enthusiastically supported this idea and, together with the scientific technical personnel and the workers of the aerocrete works, tackled this problem.

Fang Chengshi's speciality is chemistry, and he did not know much about construction materials. In order to attack this difficulty, he assiduously studied the special knowledge pertaining to construction materials, and, with the help of his comrades, studied several hundred of thousands of words translated from English-language technical materials published in five or six countries. Then he and the comrades of his team went to over 10 cities, including Shanghai and Tianjin, to study iron and steel preservation techniques. After over a thousand experiments, Fang Chengshi and his comrades finally successfully developed a "cement coating composed of one part phenolic aldehyde and one part resin." The principle indices of the new preservative reach or exceed the advanced standards of several countries, and not only does it not use casein and white sugar but also it improves the quality of aerocrete slabs, so that an aerocrete works can save over 300,000 yuan a year.

Fang Chengshi was not satisfied with the success he had already obtained. A problem of making this new preservative free from phenol pollution existed. Swellings broke out on the bodies of some workers who had come in contact for a long time with the new preservative, and the waste liquid drained during the process of making it polluted water sources. In order to solve this problem, the development team led by Fang Chengshi, cooperating with units concerned, conducted research on substituting a nontoxic material for the toxic phenol and formaldehyde. After repeated experiments over a period of more than 2 years, they developed the nonpolluting "one-part emulsified silicate reinforcing bar preservative." In July of this year, the Ministry of Building Materials appraised this new-type preservative as satisfactory in performance, low in cost, having widespread raw material sources as well as being nonpolluting, and in performance up to advanced domestic standards. After the Beijing Aerocrete Works began to use the result of its research, the cost of rustproofing each ton of reinforcing bars dropped from 51 yuan to 27 yuan.

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CSO: 5000

'RENMIN RIBAO' COMMENTS ON PROMOTING AFFORESTATION

00191233 Beijing RENMIN RIBAO in Chinese 9 Mar 81 p 3

[Commentator's article] "Afforestation is Everybody's Responsibility"

[Text] Spring Day is approaching. It is everybody's responsibility to plant trees everywhere and make the country green. In view of the vast territories and the large population in our country, the areas of forest in our country are relatively small. On the one hand, the natural ecological balance in many regions is upset, which seriously affects agriculture and animal husbandry development; on the other hand, timber is needed for national construction and people need firewood for fuel; this results in a serious shortage of wood. The basic way to change the backward situation of forestry in our country is to devote major efforts to afforestation and actively explore for more forestry resources.

We must promote afforestation in a down-to-earth manner, instead of giving empty promises and engaging in producing much publicity. We must pay attention to results, make sure that we afforest properly and take proper care of the saplings. Evidence in the past few years has proven that the effect of the past practice when we hurried to afforest the land and then ignored it completely afterwards is very bad. This practice results in a phenomenon that "in spring, the mountains are covered with green trees; in summer, half of the trees are dead; in autumn, there are scarcely any; in winter, not even one can be seen." In the past 30 years, the country has afforested 1.5 billion mu, however, only 0.4 billion mu has grown. This is because we have not attached importance to the quality of the saplings and the management over the growing trees. Hence, we must bear in mind the bitter experience of getting only half the result with twice the effort and of sometimes even working to no avail. We must thus improve the quality of afforestation and strengthen management over afforestation to ensure that no sapling we plant will die and that the saplings will grow luxuriantly into forests.

To effectively promote forestry and bring the enthusiasm of the masses into full play, we must further implement the various forestry policies. The growing cycle of trees is relatively long: it takes about 10 years, sometimes decades, for a sapling to grow into useful timber. To achieve the purpose of afforestation, we must seriously implement various effective policies which are beneficial for the development of forestry; furthermore, we must maintain political stability over a relatively long period of time. Since the establishment of the PRC, forestry resources have suffered serious sabotage. One of the important reasons is that we were affected by "left" guiding ideology, and some of the policies and measures we employed were inappropriate while others were not carried out with determination. Thus, the enthusiasm of the masses to afforest and take care of the growing trees was seriously hampered. Therefore, leaders of the party and the People's Government at all levels must sum up the positive and the negative factors of the past experiences. We must persist in relying on the communes, brigades and collectives to promote afforestation and actively promote state afforestation. On the other hand, we must encourage commune members and individuals to grow more trees. We must be strict in management over

forests and actively promote afforestation in every possible way. As for the cutting and handling of timber, we must strictly abide by the party policy and the state decrees. As for promoting afforestation, we must further emancipate our minds and adopt more flexible measures so that we can ensure that the saplings we plant will grow. We must actively promote growing more saplings, whether they are planted by individuals, collectives, communes or brigades, the same encouragement must be given. The present situation of forestry in our country is: The state does not own many forests, and still fewer are owned by commune members and individuals. It is encouraging that more trees will be owned by collectives, communes and individuals in the future. If we can grow more trees in the vast territories of our country, we will have the most precious wealth. We must give support to the peasants and help them seek more ways to make money so as to gradually grow richer. In promoting forestry, we must try every way to create better conditions and urge and encourage the masses to afforest, and we must not adopt measures which sabotage state ownership. When there are more trees, there will be more sideline products from the forests, and thus, the wealth of the society will increase and the living standard of the masses will be gradually improved.

In promoting afforestation, it is important to implement the policy of "he who plants the tree owns it" and to establish the right of ownership of forests. If we do so, we will be able to win the confidence of the people. We must make it clear that the commune members own the trees that are planted around their houses, in the privately owned mountain areas or in places where ownership rights are granted by the production teams, and that they possess the right of inheritance too. In provinces like Guizhou, Sichuan and Hubei, afforestation permits are issued. [paragraph continues]

This is similar to the practice during the land reform: The county people's governments officially issue licenses for the rights of ownership of forests and individual trees and issue contracts for the rights regarding the management and protection of collective forests and trees. This practice will stabilize the situation for the masses. Evidence has proven that establishing the ownership rights of the people and issuing licenses to ensure that the policy will not change over a long period of time is an important measure to protect forests, mobilize the activities of the masses to afforest, raise and look after the trees. The party and the People's Government at all levels must do a good job of establishing the rights of ownership of forests and issuing licenses to the commune members and strive to ensure that the commune members receive their licenses within a short period of time.

To solve the fuel problem of the masses, we must suitably allocate a certain number of private hills for the commune members living in places where there are more barren mountains and deserted gullies and we must not change the ownership rights. By doing so, the commune members can use the mountains or gullies over a long period of time, and they will be able to keep the profits for themselves. As the saying goes: "Firewood, rice, oil, salt, sauce, vinegar and tea--the seven essentials in a household." All peasants in the rural areas need firewood for fuel and keeping warm. Leaders of the party and the People's Government at all levels must be concerned about the livelihood of the masses and put planting more forests and solving the problem of firewood shortage on their agenda. They must mobilize and support the masses to plant more trees on privately owned mountains. They must relax policies so that the masses can grow more trees around their houses and in places where trees will grow. In a word, we must adopt various measures to encourage the masses to plant more trees and do a good job in afforestation.

Forestry construction is a long-term and fundamental project of the state, and it is also an important item of agricultural capital construction. We must act according to the natural and economic laws of forestry and adopt scientific measures of afforestation in order to achieve the target of speeding up production and getting more timber, protecting the forests and earning more profits. We must choose the right place, saplings, time and method when we afforest. We must not attach importance to the form and speed at the expense of the actual effect. Likewise, we should not adopt rigid measure in disregard of the actual situation when we select saplings. On the one hand, we have to promote

local saplings; on the other hand, we must also import some fine saplings and select and plant those which prove to be the most suitable for our soil. We must promote various industrial forests in line with local conditions so that the masses will increase their income. We must also pay attention to building more mixed forests so that we can prevent forest plant diseases and insect pests and meet the demand for timber in state construction and firewood for the daily usage of the masses. We must attach importance to scientific research work in forestry in order to adopt scientific measures in afforestation and in management over the forests. Furthermore, we must carry on implementing the policy of recruiting more scientific and technical personnel for forestry so as to bring their roles in forestry construction into full play and improve the scientific, technological and management levels of forestry in our country. At the same time, we must try to do a good job in publicizing forestry knowledge to the people.

Being prosperous in forestry is an important sign indicating whether or not a country is prosperous, strong and civilized. Our country has vast territories and the climate is temperate; there is great potential for the development of forestry in the vast plains, hills and mountainous areas. We Chinese have a fine tradition in afforestation, because such a practice will not only benefit our contemporaries but also our descendants. So long as we are good at summing up historical experiences, thoroughly eliminate the influences of "left" thinking, and seriously implement the various policies of the party, we will have a very bright future for promoting forestry in our country. [paragraph continues]

Let us mobilize people from rural areas, municipalities, government organs, PLA units, plants, schools and all sectors to launch afforestation activities in spring, gradually turn the urban and rural areas in our country into green gardens and make new contributions to develop forestry in our country.

CSO: 5000

BRIEFS

YUNNAN ENVIRONMENTAL PROTECTION--The Standing Committee of the Yunnan Provincial People's Congress recently passed the "Regulations for the Control of the Drainage and Disposal of Environment-Polluting Materials in Yunnan Province." The regulations stipulate: 1. The emergence of new sources of pollution is to be firmly stopped. In all prefectures and cities where the environment is already under pressure, no new factories are to be built in prevailing-wind areas, scenic spots, or water-source areas. All newly built, rebuilt, and expanded factories must strictly abide by the rules for providing facilities to prevent and clean up pollution in the design, work, and operation of major projects. 2. Pollution is to be controlled in a planned and focused way. 3. All places in the province should set up and perfect environmental protection organizations. [Beijing RENMIN RIBAO in Chinese 18 Nov 80 p 2] 9727

PAPERMILL POLLUTION CLEANUP--The Huasheng [3478 4141] Papermill in Suzhou municipality, Jiangsu Province, makes paper and cardboard. It is located in Pengqiao town beside the historic Hanshan Temple. Formerly, it discharged every day into the Grand Canal up to 350,000 tons of untreated sewage, blackening the canal waters and killing almost all its fish and shrimp. In October 1978, the responsible department of the state listed the mill as a key point for controlling pollution within a limited period of time. The province also ordered the mill to either solve the pollution problem within the limited period or close and move. The mill leadership took a series of measures, among which was using piped water to clean up the sewage so that it was up to drainage standards when it entered the drain pipes. The environment of the mill area and environs has been greatly improved. [Beijing RENMIN RIBAO in Chinese 18 Nov 80 p 2] 9727

POLLUTING FACTORIES FINED--The Haerbin municipal people's government on 8 November held a meeting at which it announced that four factories had been fined or warned for polluting the water quality of the Songhua River by oil leaks. On 5 July, a serious oil spill occurred near the Zhengyang River draining mouth of the Songhua River. An investigation clearly showed that the Haerbin No 2 Alcohol Plant, the Songjiang Tractor Manufacturing Plant, the railroad department's Haerbin Rolling Stock Plant, and the Hongwei Chemical Works had created the spill by releasing, oozing, dripping, and leaking oil for a long period of time. Not only did the excess oil flow into and float on top of the Songhua River and pollute its water quality, it also polluted a stretch along the banks 2,000 meters long and 2 to 3

meters wide. With the approval of the municipal people's government, the municipal environmental protection bureau fined the Haerbin No 2 Alcohol Plant 5,000 yuan, and fined the Songjiang Tractor Manufacturing Plant and the Haerbin Rolling Stock Plant 3,000 yuan each, and gave a warning to the Hongwei Chemical Works. [Text] [Beijing RENMIN RIBAO in Chinese 18 Nov 80 p 2] 9727

GANSU ANTIPOLLUTION ACHIEVEMENTS--Lanzhou Municipality, Gansu Province, scored remarkable achievements in combating air pollution in 1980. According to a survey, sulfur dioxide in the air was 80 percent lower than in 1977; carbon dioxide, 30 percent lower; and particles of dust, 46 percent lower. This has met the level of the demand set forth by the state. To hail these achievements, the Lanzhou Municipal People's Government held a rally on 12 March to commend 74 advanced units and 117 advanced individuals who has made contributions to this work. The Municipal Finance Department appropriated some 7 million yuan to support various industrial plants to conduct technical innovations and renovations for this purpose. [SK170515 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 16 Mar 81]

CSD: 5000

REPORTAGE ON CONTAMINATION OF HAVANA HARBOR

Havana JUVENTUD TECHNICA in Spanish Oct 80 pp 36-39

[Text] It is important that the people, as well as their organizations, become aware of this danger and prepare to join the fight in cleaning up one of the best and most beautiful ports in the world.

The problem of conservation and transformation of nature is a topic of burning current interest. Man has realized how, in the very process of his development, he has created a series of conditions which are negative for his habitat. There is, for example, growing atmospheric contamination, erosion and denudation of the earth, disappearance of valuable resources of flora and fauna, contamination of the waters, etc.

It is with regard to the latter that our work is developed about the burning topic of the contamination of the waters in Havana Harbor as a product of an unplanned urbanization, the legacy of capitalism in our country, together with abandon and total indifference on the part of those governing at that time, as well as the lack of a true understanding by the people of the problems of contamination.

To understand the critical situation in which Havana Harbor, one of the most used in Latin America, finds itself, its geographic peculiarities should first be considered.

Havana Bay typifies a "sac" bay; that is, it is formed by a narrow access channel and a large trilobed interior that offers considerable shelter and refuge for boats, ideal conditions for a great harbor.

The total surface area is 4.5 kilometers of which 93.2 percent corresponds to the interior of the "sac" and 6.8 percent to the entrance channel. Due to this conformation and distribution of the total area, when the water passes through the narrow accessway, waves that are not wide but are very high are produced, favoring the displacement of the particles accumulated on the bottom; at the same time, in the interior, or the "sac," the waves become larger but lose height, making very difficult the power of displacement and the dragging of particles of this area toward the exterior.

From the conditions pointed out above, it is deduced that the contaminating dumping, which amounts to approximately 2,500 liters per second at present, has been progressively accumulating with no possibility of escape or of being carried toward the "open sea"; this would contribute, in a certain manner, to the maintenance of a relative equilibrium in the waters of the bay.

It is worth mentioning that, due to these same conditions, Havana Harbor has one of the highest levels of contamination, not only in our country, but in the world.

The peculiar geographic conditions of the bay have been worsened by the negative processes of an inadequately planned urbanization and industrial development, the results of which, in this instance, are the continual dumping of every type of residue coming from approximately 22 industries such as: refineries, tanneries, fertilizer plants, edible fats and meat processors, thermoelectric plants, shellfish processors, soap and perfume factories, a metal processor, etc., as well as the sewer drainage coming from zones 1, 2, 3, 4 and 5 of Havana's Mambises Shipping Enterprise.

The residual waters of these industries contain copper, aluminum, manganese, zinc, lead, sodium sulfide, sulfuric acid, lime hydrate, solutions of chrome III, crude oil sulfates, sodium flourasilicate, caustic soda, fat residues and shellfish waste, among others.

It is worth mentioning that the main source of contamination comes from the Nico Lopez Refinery, which dumps approximately 10,000 tons of crude annually as a result of the poor condition of worn out filter mechanisms since this industry's production, like the others, has multiplied sevenfold, but the dumping methods are the same as before.

In general, it can be said that all of the industries and enterprises in Havana directly or indirectly dump their waste waters into the bay.

Other sources of contamination are the Martin Perez and Luyano Rivers, as well as the Tadeo Stream, which carry to the bay their sewer drainage waters coming from still other highly contaminated areas. In the same way, during floods they carry toward the harbor uprooted trees and bushes in their path, as well as dead animals.

The sewage drains which flow directly into the bay are also a dangerous source of contamination together with tankers' cleaning products, elements that, due to carelessness or by accident, end up in the sea (fertilizers, chemical elements, oil and its by-products, etc.).

As can be seen in this brief synthesis, the level of contamination of the waters of Havana Harbor is highly dangerous; this is evident in the destruction of marine organisms, that of valuable foodstuffs due to the introduction of oil by-products into fishing sources, introduction of cancer-producing agents into the chain of marine nutrients and sources of human alimentation, fire risks due to the presence of hydrocarbons aside from the dangers confronted by a large

city next to a contaminated harbor, since this favors illnesses and brings a series of social and economic drawbacks that would be difficult to enumerate.

Steps have already been taken to try and limit, to some extent, the progressive increase of this contamination. Some harbor cleaning equipment (still only very little) has been bought from the Soviet Union; our technicians study ways of cleaning up our bay in the USSR and other countries. But it is still not enough; great investments, time and tremendous effort are needed to slowly recuperate that which has been abandoned during centuries. Moreover, it is necessary to create among our people a true awareness of the danger in which our old and beloved harbor finds itself so that everyone will conscientiously participate in this enormous, but necessary, task: making Havana Harbor the cleanest and most beautiful one in the world.

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ANTI-POLLUTION MEASURES PROPOSED BY PROFESSOR

Athens O OIKONOMIKOS TAKHYDROMOS in Greek 26 Feb 81 pp 29,30

[Text] After having analyzed the problem in detail, the causes and the extent of air pollution in the area of the capital in the first part of his research which was published in the preceding issue, University of Salonica Professor D.I. Plessas, in today's second and final part of his research, formulates a series of proposals, which could lead to properly confronting the subject.

The State policy has as its goal the development of a socio-political framework for a rational, constructive action. The action and the process/framework from which action stems are bound together and equally significant. State policy is based on dialogue which aims at the smoothing out and negotiating of mutually-clashing views and interests. The basic premise for the beginning of a dialogue is the definition of opposing positions, the mutual admission that there is a problem for which it is urgent to seek alternative solutions and, ultimately, the demonstrated ability of the State to assume the responsibility for planning and for its implementation.

Before formulating definitive proposals for the protection of air quality, it is necessary to ascertain the basic premises. The first irregularity one observes has to do with the first premise; that is, that there are contrasting positions. Here the contrast is not a subject of degree but absolute. In other words, according to the view of the State, there is no air pollution, at least not to the point where it is necessary to find alternate solutions and, as a result of this irreconcilability, the two first premises of the dialogue cannot be fulfilled. The systematic fictionalization of the problem brings public perception into conflict with the "official line" and creates a credibility gap. Sadly, millions of inhabitants of the Greater Athens Area (MPA) are called upon to choose between what they see and breathe and the data on pollution published by the Ministry of Social Services. The credibility gap should place the burden on the inspection agencies of the Ministry; the unexplainable, pathological secretiveness of those who control the flow of information; and the equally secretiveness-prone subordination of reality to the official line prevailing at the time. Let's confine ourselves to what we know about the problem.

First, the volume of pollution in the Greater Capital Area (MPA) increases by 15% yearly, with the result that the 880,000 tons [metric] of 1975 approach 1.6 million tons at the end of 1980. At these enormous levels of pollution, relatively minor atmospheric changes, e.g. temperature, calm, etc., will create frequent atmospheric inversions of longer durations. The one of April, 1977, which despite lasting less than five days, doubled the coefficients of correlation between pollution and hospital admissions. The specter of consequences from long-term atmospheric inversions -- thousands of victims, especially in the ages below five years and over 65 -- which have affected other cities world-wide, will soon threaten the Greater Capital area.

Secondly, the correct morphology of the volume of pollution is totally unknown. We know its composition by listed elements only in the basic pollutants. Namely SO_x , NO_2 , CO, TSP, smoke and hydrocarbons (HC). Other pollutants with high toxicity and demonstrated carcinogenic properties such as asbestos, benzol [benzene C_6H_6], lead, mercury, beryllium and others remain unknown, despite the fact that their total volume amounts to several thousand tons.

The Ministry of Public Service insists on the practice of taking samples of only three pollutants, to wit: sulphur dioxide, total suspended particulates and smoke (SO_x , TSP, Smoke) and ignores the possibilities offered by technology in the listing of sources of emission of pollutants which, among others, connect a specific industrial activity with a specific type and level of pollutants. Thus, the "faceless" method of the Ministry offers anonymity and shelter to branches of private and State industrial activity. At the same time, the Ministry of Industry and Energy, in defiance of any environmental protection policy, issues and renews permits to thousands of industries and handicraft enterprises annually.

Thirdly, as a result of the first part of our research, the location, operation, and the reliability of the control stations of the Ministry of Social Services, are under suspicion. The gaps in operation, the stubborn silence of the central stations and the conclusions of this research, concerning the systematic repetition of the statistical correlation, reinforce the suspicion that, at least for the sulphur dioxide, the official data are three times lower than the actual ones.

We move now to the planning and implementation capability of the State. Here, the meaning of the term State is abstract and faceless, mainly because in the area of the environment and, more specifically, in that of the atmosphere, it is absolutely impossible for anyone to find which branch of the State is actually responsible for the administration of that area. I do not refer specifically to the improvisation and compartmentalization of public administration, but generally to the absurd insistence that the socio-economic problems are unsolvable; second, the substitution of planning and rational thinking with ex cathedra decrees; and third, in recognizing that only "a foreign authority" can be used as a source of wisdom and innovation because, after all, it is from it that raw materials, energy, technology, and political consent are received.

It is not by accident that the public administration "places" individuals with limited talents and professionalism in its service while it avoids worthy and competitive criteria in selecting new officials.

Specifically in the sector of air pollution, we note the following traits: first, each of the five-year plans have not been able to define standards for the protection of the urban environment on any level (e.g., water, atmosphere, industrial health, noise, etc.). Despite the fact that more than 55% of the population is concentrated in two urban areas. The five-year plans -- we make the heroic assumption that the Ministry of Coordination at least reads them -- insist in confronting the environmental problem in Greece under the narrow focus of the protection of natural resources, ignoring the human factor.

It is indicative that during the last decade only four decrees/laws have been enacted, which allegedly safeguard public health. They are:

- 1) In 1970: "Concerning the Stabling of Animals"
- 2) In 1975: "Concerning the Rules and Premises for the Establishment of Slaughterhouses and Poultry Farms"
- 3) In 1975: "Concerning the Protection of Workers Using Benzol [Benzene C_6H_6]"
- 4) In 1978: "Concerning the Protection of Those Engaged in the Welding and Cutting of Metals"

Thus, the protection of natural resources, isolated as a goal from the social and human factor, is a popularized economic and political inconsistency. Economic, because, by removing the individual as the logical recipient of the services (good or bad) of a natural environment, it removes every State-economic indication of protection standards. In other words, the question of up to what point a community should invest in the clean-up of its environment, it is not bound to have a logical answer. Political, because, with this position, the State proclaims itself the guardian of natural resources which are unrelated to its political survival (do trees vote anyway?), while it ignores the health of individuals, which is relevant.

Secondly, institutionally, air pollution as a subject is scattered among seven Ministries and one Superagency. They are:

- 1) Ministry of Industry and Energy: Control of air pollution by industry
- 2) Ministry of Coordination: Secretariat of Regional Planning, Development and Environment, Greek Atomic Energy Committee
- 3) Ministry of Social Services: Control Plan of Environmental Pollution of Athens
- 4) Ministry of Communications: Directorate of Planning and Research of

Emission Controls

- 5) Ministry of Northern Greece; Council of Environmental Protection, Salonica Air Quality Control
- 6) Ministry of Defense: National Meteorological Service
- 7) Ministry of Regional Planning and Development; More or less concerning urban environment, but not defined
- 8) National Council of Regional Planning, Development, and Environment: General oversight by some super-ministers

No one is substantially involved with air pollution, but the greater effort is spent on internal and inter-ministerial disputes. The creation of the Ministry of Regional Planning, Development and Environment added to all the confusion; first, because the new ministry committed the tactical error of confronting the Ministry of Coordination for the "allocation" of the regional planning and coordination -- the national-regional section to the Ministry of Coordination and, the politically sensitive local section to the Ministry of Regional Planning and Development -- and secondly, it did not contest from the Ministry of Social Services the management of urban environment, which, as a sector, logically belongs to the Ministry of Regional Planning, Development and Environment. On the other hand, the Ministry of Social Services has more problems in its own health sector than it is evidently aware of.

Thirdly, the comprehensive legislative development on air pollution, which consists of 14 (but 12 in force) legislative decrees, gives a biased and disjointed picture of the legislative interest. More to the point, this picture is as follows:

- 1) 1957: Forbids issuance of traffic circulation permits to diesel automobiles of less than two-ton net capacity
- 2) 1967: Makes compulsory the "use" and "good" maintenance of soot-collectors
- 3) 1972: Defines the maximum permissible CO content in emissions and the means of control
- 4) 1973: Defines the means of measuring the soot content in emissions of diesel motors
- 5) 1973: Imposes smoke-measuring controls for heating installations
- 6) 1975: Imposes controls of oil furnaces in buildings
- 7) 1976: Forbids the use of residual oil only in new buildings

- 8) 1976: Forbids the use of residual oil within certain districts
- 9) 1976: Lowers to 0.5% the content of sulphur in fuels used in furnaces in buildings
- 10) 1977: Forbids the use of residual oil in all furnace installations in buildings except those for industrial use
- 11) 1977: It adds article 15 to the Traffic Code, which requires drivers to maintain their motors so as to avoid emission of "harmful" substances or products "polluting the environment." The Ministry of Communications has not yet approved the technical periodic control
- 12) 1978: Imposes smoke-measuring controls for industrial and handicraft installations

Substantially the only developments in the problem of air pollution are two: the requirement for smoke collectors for building furnaces and the forbidding of the use of residual oil in housing units. Both are simple in application and enforcement, easily detected and with minimal consequences to the fundamental problem. The balance of the law decrees, which deal more with industrial sources of pollution and the "good behavior" of automobile drivers, have been weakened either, because they presuppose monitoring, control and enforcement by special workshops of the various ministries, which in turn, presuppose organization and system; or, because they have not been precisely formulated. For example, the terms "good use and maintenance"; "harmful" substances which "pollute" the environment, etc. have no meaning. The law of 1978, which requires more than one Ringelman unit in smoke, means absolutely nothing when we do not have criteria for smoke, standards of smoke reduction in Attiki, and, more importantly, knowledge about the dynamics of the relation between compliance to El Ringelman unit and the preferable levels of smoke in the area (ambient standards). In summation, the planning weakness, the fragmentation of executive powers, and the legislative anemia are the main characteristics of governmental initiative in the control of air pollution. Within this shabby framework it is extremely difficult to initiate a serious dialogue for policy measures.

The proposals which follow constitute a point of departure in the right direction. I would consider them rather subjects of research and a basis for analysis than measures for the cleaning of the atmosphere in the Greater Athens area.

A. Strengthening of the Planning and Implementation Departments of the Ministry of Regional Planning, Development and Environment.

A proposal is made for the creation of a General Directorate of Air Pollution Control (EAR) as part of the Ministry of Regional Planning, Development and Environment. The EAR should include the Ministry of Social Services' Program of the Athens Environmental Pollution Control; the industrial pollution control of the Ministry of Industry and Energy; the Directorate of Emission

Controls from the Ministry of Communications and the Council for the Protection of the Environment (atmosphere section) of Salonica of the Ministry of Northern Greece. The EAR should not have local characteristics, e.g., Athens, Salonica, etc., but be national in scope, covering all urban centers.

The mission of EAR is the formulation, enforcement and monitoring of permissible pollution limits on two levels: first, on primary limits for the protection of public health and, second, on secondary limits for the protection of natural resources, property components, economic sources, etc. Both of these limits will be related at least to basic chemical substances--pollutants such as SO_x , TSP, CO, hydrocarbons, NO_2 , and photochemical oxidants.

The functions of the EAR will comprise the following:

The collection and analysis of data indicative of air quality over the principal cities; the keeping and updating of records on air pollution by industrial activity (e.g., power usage, transportation, etc.) and by pollutant; the development of methods for alternate means of pollution-control by building units (industrial, residential) and transportation equipment; the preparation of studies on the effects of pollution on health; research on cost-benefits corresponding to the various control levels; analytical studies on the apportionment of the cost of the controls to industry; and research on the expenditures for the environment in the context of the national and regional development. In addition, the Directorate will take the initiative for the implementation of an air pollution warning system and also the responsibility for the plan and the completion of legislative proposals (16).

B. Concrete Policy Measures against Air Pollution

1) Reduction of Emissions from Transportation Equipment Engines

The pollution from transportation equipment adds a significant portion to the entire volume of pollution in the Greater Athens area, mainly hydrocarbons, carbon monoxide, and nitrous oxide. The existing technology allows the reduction of emissions by 95% to 98% per vehicle at a cost of 25,000 drachmai per vehicle. The United States and Canada compel their automobile industry, as well as the rest of the world, to whose market they export, to operate vehicles with full emission controls. This measure, in combination with other emission control measures for fixed installations, has reduced air pollution in urban developments of North America by 90% or more. Specifically, recent data indicate that, during 1977, in 18 urban areas of the U.S.A., in one theoretical violation of 6,570 days (18×365 days of the year) where the indices of the TSP, SO_2 , CO, NO_3 , and O_3 (oxidants) were in excess of 300 micrograms per cubic meter, only four (4) days were noted where the indices were over the $300 \mu\text{g}/\text{m}^3$ -- this in 18 urban areas with a special CO problem. In 16 other urban areas with a main O_3 (oxidants) problem, in 5,840 theoretical violation days, no day was registered with $300 \mu\text{g}/\text{m}^3$. With regard to the Total Suspended Particulates (TSP) in four areas, on only

one day was there a violation. It is most significant that in 41 urban centers in the U.S.A. with 14,965 days of theoretical violation a year of indices of the above mentioned pollutants at 200-300 $\mu\text{g}/\text{m}^3$, only 504 days, or 3.3%, were registered with 300 $\mu\text{g}/\text{m}^3$. The role of control measures of the transportation equipment is the most significant.

The concrete proposal is for the State to demand all vehicles imported by Greece comply with the regulations of North America. The European and Japanese manufacturers comply, as do the Americans, with these regulations without chemical means and they already have great experience and success with their own technological means.

Figuring an average price to the Greek consumer of approximately 400-500,00 drachmai per vehicle, the cost of emission control is less than 4%. The cost of the 25,000 drachmai can be deducted by the State, either entirely or half from the duty or the tax and achieve a significant reduction in air pollution within five years. The increase of fuel consumption per kilometer for small size and light weight vehicles is insignificant. On the one hand it goes together with the policy (odd-even) of reducing gasoline consumption and on the other, it requires the driver to assume part of the cost for pollution control.

2) Imposition of an Emission Tax per Vehicle

Theoretically, the tax per vehicle should be equal to the community's cost for the emission control specifications. In its practical application it can be calculated on the combination weight/engine capacity and in relation, first, to the portion of vehicular pollution, and second, to its reduction, which brings that portion of the community's cost to zero.

3) Vehicular Traffic Decongestion of the Central Section of Athens

This measure is at this time being studied by the Ministry of Regional Planning and Development and automobiles have already been banned from certain central streets. I propose the extension of this measure to an area of 16 square kilometers to include the axis Syndagma-Akropolis-Omonoia.

4) Gradual Removal of the DEI [Public Power Corporation] Plant from Keratsini

This step is inevitable because in the next five years this unit will be responsible for 80-90% of the total suspended particulate pollution (TSP) in the MPA [Greater Athens Area]. The yearly rate of pollution by DEI is approximately 20% without taking into consideration that in the future the production of electric power will necessarily be based on burning coal. Smaller units of energy production based on coal can be gradually located in Voiotia or towards Korinthos, where the local industrial complex has already done the greatest possible damage to the ecological system.

5) Re-examination, under the Ambient-Environment Factor, of the Problem of Industrial Concentration in the Attiki Area

The industrial over-concentration in the Attiki area has concerned governmental policy since about 1952. The decentralization measures and incentives (e.g., subsidies, tax and duty exemption, etc.) of all post-war governments have failed. The reasons for the desired decentralization were based on arguments such as: the stability of the local economy of the area, urban coordination as a consequence of industrial activity which follows concentration in the form of unequal increase of parasitism and underground economy.

The reasons for the revival of this policy are more serious and concern the survival of MPA. It is possible that, during the decade of the 1980's, the evacuation of Athens due to threats of atmospheric inversions may be a frequent phenomenon, while towards the end of the century, the specter of the evacuation of the city will reach disturbing dimensions.

For the present, there exists no policy against industrial pollution in the atmosphere (nor in the waters) except the smoke-measuring control of the Ministry of Industry, which, as a measure "salves" the conscience of the Association of Industrialists and that of the Ministry,

However, there exist half-way solutions, half-measures, compromises, and "behind-closed-doors" agreements and perhaps they should exist in a mostly democratic society. But, we should be aware of the fact that in future courses of action the profits of private interests and groups endanger the health and well-being of the majority of the community.

The policy measures against air pollution are considered essential and independent from the statistical portion of this article. Essential, because the aggravation of the relation of pollution to health will not be anticipated by the research of the present concept, especially because the standards are those of 1976-77 and of low-quality level. Independently, because, according to the author, precious time has already been lost which could have been invested in research. The problem before us is the saving of the dangerously short-time interval which remains for the daring confrontation of the oncoming crisis.

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